Remarks

Claims 1-19 are pending in this application. Claims 1-19 have been rejected. The invention is believed to be patentable.

The invention relates to hybrid fiber coax (HFC) networks and to broadcast and narrowcast signal distribution technologies. Traditional approaches at the head end use radio frequency (RF) combining networks to combine and upconvert signals. Limitations of the RF combining networks (for example, static configuration) reduce the amount of HFC network bandwidth that can be economically used.

The invention involves an improved apparatus and method for providing an HFC forward path spectrum. The HFC forward path spectrum includes a plurality of channel slots in the form of frequency ranges. A head end modulator directly receives a switchable digital data signal, internally processes the switchable digital data signal, and produces the HFC forward path spectrum that directly drives the network fiber node.

The Examiner rejected claims 1-19 under 35 U.S.C. 112, second paragraph. Claims 1, 8, and 15 have been amended to clarify the antecedent basis for "the HFC forward path spectrum."

The Examiner rejected claims 1-3, 5-6, 8-10, and 12-13 under 35 U.S.C. 102(e). The Examiner rejected claims 7, 14-16, and 18-19 under 35 U.S.C. 103(a). The Examiner rejected claims 4, 11, and 17 under 35 U.S.C. 103(a). In making each of these rejections, the Examiner relies on U.S. Pub. No. 2002/0196491 A1 (Deng et al.).

In accordance with the invention, in a hybrid fiber coax (HFC) network, a head end modulator directly receives a switchable digital data signal and produces the HFC forward path spectrum that directly drives the network fiber node. This approach to producing the

HFC forward path spectrum with a head end modulator is used as opposed to a traditional RF combining network approach.

Deng describes a passive optical network that uses wavelength division multiplexing. In the illustrated embodiment, shown in Figure 4, Deng discloses a hybrid passive optical network employing wavelength division multiplexing. Specifically, upstream node 102 is configured as a central office exchanging communication signals with a metropolitan area network via a multiplexor and associated digital cross connect 106. This illustrated arrangement does not teach the claimed head end modulator.

However, in paragraph 25, Deng does mention that upstream node 102 may be a head end as may be found in a hybrid fiber coax cable television network. In the event that upstream node 102 were to be configured as a head end in a hybrid fiber coax network, there is still no teaching of the claimed invention. Substitution of a head end for the central office at upstream node 102 still does not teach the claimed head end modulator directly receiving a switchable digital data signal and internally processing the switchable digital data signal to produce the HFC forward path spectrum. That is, although node 102 could be configured as a head end, there is still no teaching of the modulator.

The Examiner, in making the rejections, makes reference to digital cross connect 106; however, in replacing the central office with a head end, because there is no teaching of the claimed head end modulator, a traditional radio frequency (RF) combining network would be used in order to provide a functioning head end. The digital cross connect 106 is only described as a way to connect the central office to the metropolitan area network. Deng's mentioning that node 102 may be a head end means that Deng's passive optical network could receive signals from a head end instead of a central office. Deng does not give any details of the head end itself, which is accordingly assumed to be the conventional arrangement that uses a traditional RF combining network. The digital cross connect 106 is only described as a way to connect the central office to the metro network, and there is no explanation of how

the cross connect could be used with a head end, let alone any teaching to provide the claimed head end modulator.

Each independent claim (claims 1, 8, and 15) recites a combination of features including the head end modulator directly receiving a switchable digital data signal, processing the switchable digital data signal, and producing the HFC forward path spectrum that directly drives the network fiber node. Deng does not teach or suggest such an arrangement for reasons given above. Claims 2-7, 9-14, and 16-19 are dependent claims. Accordingly, claims 1-19 are believed to be patentable.

Respectfully submitted,

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